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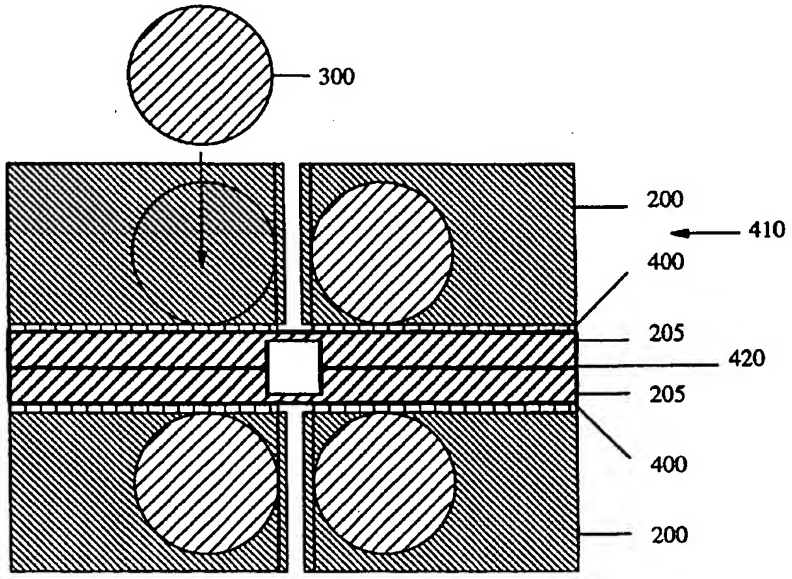
(54) Title: MONOLITHIC MICRO-ENGINEERED MASS SPECTROMETER



(57) Abstract: A method of constructing a micro-engineered mass spectrometer from bonded silicon-on-insulator (BSOI) wafers is described with reference to a quadrupole spectrometer. The quadrupole geometry is achieved using two BSOI wafers (200), which are bonded together to form a monolithic block (410). Deep etched features and springs formed in the outer silicon layers are used to locate cylindrical metallic electrode rods (300). The precision of the assembly is determined by a combination of lithography and deep etching, and by the mechanical definition of the bonded silicon layers. Deep etched features formed in the inner silicon layers are used to define ion entrance and ion collection optics. Other features such as fluidic channels may be incorporated.

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